

Color Workflow



Now with ICC color support, Acrobat 4 may be the breakthrough for which the industry has been waiting.

By John W. Stoy

A little over a decade ago, most prepress and printing jobs were constructed using a combination of products and techniques that are now considered by most observers to be “old school.” During the past decade, we have seen an explosion of newer products and techniques which have reshaped our industry as never before. Literally all of the software, and even most of the hardware, that we are now so dependent on was essentially unheard of in very early 1985.

It used to be that color management was nothing more than a combination of seasoned scanner operators, strippers, and pressmen with an eye for color. High-quality color was achieved by subjective tweaking throughout all prepress processes and could vary widely from job to job. Color management today, however, involves all pieces of the workflow, from creative and production software to input and output hardware—right down to the monitor on which we view the job.

And as if desktop scanning, digital retouching, page layout, imposition, trapping, preflight, and color management software weren't enough, we are now faced with a totally new way of generating and moving files—namely, the Portable Document Format (PDF). For the past few years, Adobe Acrobat and the PDF file format have slowly been creeping into the mainstream of professional reproduction. But until now, PDF has been unable to offer the color support needed to ensure its acceptance. There have, however, been recent changes in this technology which lend it to better comply with the rigors of professional publishing and printing. And the recent introduction of Acrobat 4 is an excellent opportunity to revisit the value of this solution, especially as it relates to color issues from the professional publishing point of view.



Robert Mauro

Designed as a way to easily move digital files from one computer to another, PDF files can be read using free “reader” software and are independent of computer platform—and, when properly made, typefaces (fonts) as well. PDF files have become a relatively standard way to produce hardware and software documentation. Using Acrobat Reader software, any user can read, and subsequently print, PDF files on a very wide range of printers.

Compared to native application files such as those from Adobe PageMaker or QuarkXPress, PDF files have several advantages. Generally, but at the user's discretion, the fonts used in the document are embedded in the PDF file, with

with PDF



each embedded font adding 30-40K to the file size. Fonts can also be “subsetted,” where only the characters actually used in a job are embedded, which produces smaller files but can retard editing at later production stages. Graphics are always embedded, except where OPI is used. The file format also has several compression technologies available, making the file smaller and, therefore, quicker to electronically transmit. Some of these compression technologies, such as CCITT Group 4, may not be familiar to many prepress personnel, but they work transparently.

Originally, PDF files were not particularly useful for high-end reproduction. Acrobat 3, introduced in 1996, significantly improved the prospects for professional printing, particularly for single-color jobs, but left lots of room for improvement for multicolor jobs, including spot-color and 4-color work as well as multitone (duotone, tritone, etc.) output. There was little support for any type of true high-quality color reproduction.

A little history

Adobe has historically recognized four major applications for PDF files: first are files to be downloaded from online sources, second are files to be distributed on CDs, third are files directed toward output devices such as inkjet and laser printers and digital copiers, and fourth are files directed toward conventional printing presses or computer-to-paper devices such as the Xeikon DCP-1, Agfa Chromapress, and Indigo ePrint. Each of these applications is optimized by somewhat different choices (i.e., resolution, color space selection, and font embedding) as the PostScript and PDF file is being created. A properly made PDF file for press applications obviously will be more complex (and larger) than one made for online viewing.

PDF files are not easily edited—for that, native language programs are far superior. However, Acrobat Exchange does provide a “TouchUp” tool which can be used for minimal text editing—things like correcting typos and changing prices. Another thing PDF users have struggled with is editing of graphics. For more overall editing capability, Enfocus offers PitStop, an Acrobat Exchange plug-in for Macs and Wintel 95/98/NT platforms. PitStop, now in version 4, provides more typographic capability as well as color changing capability and the ability to alter or move objects on a page. It also provides access to system fonts which may not have been embedded in the PDF file. Objects can also be copied and pasted between PDF documents.

A number of developers have produced plug-ins for Acrobat Exchange 3 which have added immensely to its functionality. Besides Enfocus PitStop, there is Lantana Research Crackerjack, which provides the ability to produce color-separated images for many PDF files and supports register and crop marks. A Bag of Tricks from Quite Software converts spot to process colors or, where jobs are being repurposed, allows conversion of all text items to black. It also supports ICC profiles in RGB-to-CMYK conversion and can repair some PDF files which have been improperly made in Distiller.

It was just a little over a month ago that Adobe announced Acrobat 4 and upgraded the PDF file format from v1.2 (for Acrobat 3) to v1.3 (for Acrobat 4). These products should be available by press time. Acrobat 4 runs on PPC Macs (Mac OS 7.5.3 or higher) and 486-Pentium PCs running Windows 95/98/NT. Acrobat 4 and the new file format add greatly to the overall capability of PDF files, particularly for publishing but also for less complex output. There is better support for TrueType fonts, significantly better support for color and color output (including color management), better editing capability for both text and graphics, and support for Asian fonts. The Touch-Up tool has been significantly enhanced. Page sizes as large as 200x200 inches are now accommodated, supporting even the largest of the large-format printers.

As PDF file format v1.2 is based on PostScript Level 2, so PDF format v1.3 is based on PostScript 3. PostScript 3 offers 1024 shades of gray, as compared to 256 in PostScript Level 2, and in-RIP functions such as trapping. PDF files from Acrobat 4 run very efficiently on PostScript 3 RIPs but are also compatible with Level 1 and 2 RIPs. There are several functions available in the new PDF file format, such as support for bleeds and crop marks, that Adobe has not addressed with Acrobat 4, but they are being handled by various plug-in vendors.

The structure

Acrobat is actually a small suite of applications. With the Acrobat 4 suite, the central application, also called Acrobat but previously called Acrobat Exchange, allows printing to

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many devices, saving as PDF or PostScript files, and some limited editing of PDF files. Using either a one- or two-step process, Acrobat Distiller creates PDF files from any PostScript (.ps) file, such as those produced from QuarkXPress, PageMaker, or any other graphics application. More on that later. Acrobat Capture works with scanners to perform Optical Character Recognition (OCR) work on documents, then convert the data to PDF files. PDFWriter makes PDF files in one step directly from simple documents such as basic word processing and spreadsheet documents. Currently for Windows users only, Acrobat Web Capture allows download-

ing of HTML documents, and then converts them, retaining all Web links, to PDF files. Also for Windows only, PDFMaker allows direct making of PDF files from Microsoft Word, Excel, and PowerPoint. Acrobat Reader 4, free for PPC Macs and Windows 95/98/NT PCs, allows reading and printing of any PDF file.

Although there are several shortcuts, making a PDF file is generally a two-step process. The first step is to make a PostScript file—which virtually all graphics applications will do directly. PostScript files automatically include the graphics used in them, so the graphics do not need to accompany the file, as with QuarkXPress files and sometimes with PageMaker files. The second step is the “distilling” of the PostScript file to make a PDF file. With some applications such as PageMaker, making the PDF file from a native file appears to be a one-step process because the two steps happen with no intervention between them. Distiller is currently bundled with PageMaker. On its web site, Quark also supplies a beta XTension for QX4 which imports and exports PDF files. Announced in early March, Adobe's new product for design and page layout, InDesign, which was previously known as K-2, allows the user to create PDF files in one step, without the use of Distiller.

With Acrobat Distiller, users can “read” PostScript files, “distill” them, and write PDF files which can be read almost universally. With a minimum of effort, simple and moderately complex jobs, including CMYK separations, can be output to PostScript Level 2 or PostScript 3 imagesetters. There are important choices to be made about fonts when producing the

PostScript file, and others choices, including resolution and color reproduction, to be made when producing the PDF. Adobe has information regarding these choices on its web site. In late 1998, Acquired Knowledge introduced EZ-PDF, a \$79 program that uses a “virtual printer” model to assist Acrobat in producing correct PDF files directly from any Macintosh file. EZ-PDF also supports printer styles and the Adobe Portable Job Ticket Format (PJTF).

New features

Before Acrobat 4, one of the major problems was that it was too easy to make an error in the distilling process because previous Distiller defaults were aimed at on-screen viewing

Tips for color management:

1. Educate yourself

Whether it's a book, video, or workshop—make sure that you and your employees understand the basics of color theory and what is needed to maintain that color throughout the prepress process. You need this foundation if you want to build the right solution.

2. Find a solution that works across your entire workflow

There are many solutions that only address part of the workflow. Simply calibrating your monitor, or only your desktop printer, for example, will not help assure that the color you are capturing on a scanner or outputting on a digital press is what you expect. All hardware and software involved from input to output must be included in the solution for it to work effectively.

3. All equipment must be profiled accurately

When establishing profiles for your devices, be sure that the profiling tools and measurement devices are set up correctly and that the user understands how to operate them. These profiles are key to the solution.

4. Identify all output device gamuts

One inkjet printer is not like the next, and in fact even two of the same exact printers from one vendor are not alike. The gamut, or range of color, that a device can capture or output varies greatly, so an important part of profiling is identifying those gamuts.

5. Start with color-managed palettes

As designers work to create images and pages, it is helpful if they can work from palettes that will keep them within the bounds of what the devices in the workflow can handle. This will eliminate many of the gamut problems that can occur when a graphic element calls for color values that cannot be produced on a certain imaging device.

Optimizing for press:

Because Acrobat 4 allows users to choose from online, print, or press for their output destination, more control is now available over the quality of the final product. Shown here is the interface for press-optimized file output and the options that users will see.

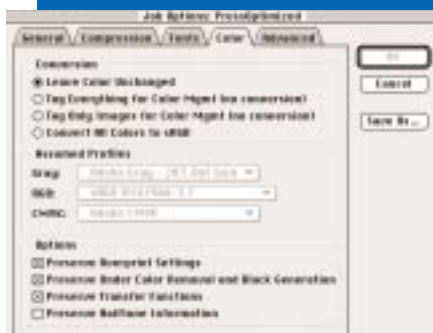


Compression ratios and methods are assigned for all types of images as well as text and line art.

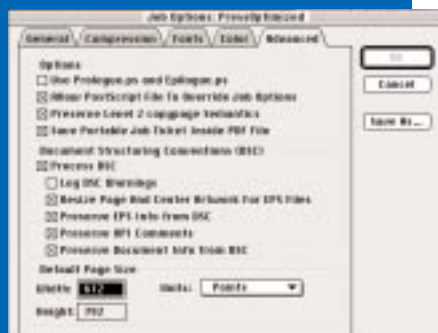
Embedding and subsetting of fonts can be controlled by the user with rules and conditions for best results.



Color management features allow users to preserve ICC color profiles as well as things like overprints and UCR.



Advanced options allow access to job history, PostScript preferences, OPI support, PJTF information, etc.



rather than professional reproduction. Consequently, many PDF files were too low in resolution and had RGB instead of CMYK color data embedded in the file. Acrobat 4 solves these problems by providing three defaults, one for on-screen viewing, one for "print" (i.e., digital printers), and one for "press"; in the latter, there is very little, if any, compression, and color data is appropriate for printed reproduction. Users can modify any of these preset defaults to create their own default, which can then be shared with other users. Acrobat 4 also fully supports the ColorSync CMS on the Mac. Consequently, images containing scanner and/or monitor profiles are retained by Acrobat. Output profiles are applied as needed during the proofing or final output process.

Distiller 4 features a radically expanded Job Options dialog box (see sidebar at left). Users can now select from Screen Optimized, Print Optimized, or Press Optimized defaults, or create their own customized options. Acrobat 4 also allows pages to be inserted, removed, reordered, cropped, or replaced. PDF files can also be split or combined.

In previous Acrobat versions, editing of PDF pages was quite limited—type was generally edited one line at a time, and graphics were impossible to edit. With Acrobat 4, double-clicking on a graphic launches Photoshop 5 or Illustrator 7 or 8, depending on the type of graphic. Using Photoshop or Illustrator, editing can be done as needed and the graphic replaced. Also, complete pages can be extracted from a PDF document one at a time and brought into Illustrator, edited, and then replaced. In addition, EnFocus PitStop 4 provides the ability to edit complete paragraphs or to more completely alter objects.

Adobe has also modified the user interface and expanded the Acrobat tools as well as changed many keyboard shortcuts. There is a new vertical toolbar. Command-1 (Control-1 for PCs) now displays a page at actual size, as in most other graphics applications. (Previously, that keystroke took the viewer to Page 1.) The navigation pane, to the left of the displayed page, now displays Bookmarks, Thumbnails, or Annotations on tabs. Acrobat 4 also provides "Tool Tips" for tools in both horizontal and vertical toolbars.

Pages with TrueType fonts were a problem in earlier versions of Acrobat. Although the jobs could be printed without incident, if an alteration was needed, the type could not be selected or edited. Acrobat 4 fixes this problem. Page numbering was also a problem with earlier versions of PDF files. Because of Table of Contents or other items, document page numbers often do not match up with the page numbers on printed documents. With

Acrobat 4 fully supports ColorSync on the Mac. Consequently, images containing scanner and/or monitor profiles are retained by Acrobat.

Using native-language or PDF files, PressReady is designed to provide very accurate proofs from relatively inexpensive desktop inkjet printers.

Acrobat 4, documents can be divided into sections, with each section given its own page numbers. This feature is not retained if the renumbered file is then reopened using Acrobat 3.

Acrobat, including early versions, supports "watched folders." When native files are moved to these folders, Distiller is activated and the PDF file is automatically created. Multiple watched folders can be created to match the intended use, and PDF files can be automatically moved to other watched folders for final output. Many of the vendors of Acrobat plug-ins also support watched folders.

One of the problems in printing is that the creator of a file may not know about the conditions of the final reproduction, i.e., the type of press and

paper the job will be printed on. Adobe's PDFWriter, a Chooser item similar to Apple's LaserWriter 8, supports a concept called a Virtual Printer. Using the Virtual Printer to make the PostScript file allows the user to delay the final output specifications until they are fully known, rather than guess at them earlier in the process. In some cases, the parameters for the final job output may not be known until minutes before the output begins.

Preflighting, proofing, and imposition

The preflighting of print jobs has become an essential element in the workflow of many firms. As with any job to be reproduced on press, the earlier an error is caught, the better. Tools for preflighting of PDF files existed previously, but some of them have been recently enhanced. Markzware FlightCheck 3.4 offers preflighting of PDF files as well as six native-language file formats. Extensis Preflight Pro 2.1 has previously preflighted native files as well as PDF files, and it offers the option of producing a PDF file from a native file. Download Mechanic Pro from Acquired Knowledge has previously preflighted PostScript and PDF files. Checkup 1.5 from Enfocis has previously preflighted PDF files, but the preflight function is now being included within its new PitStop 4.

With Acrobat 4, Adobe has added several new options to aid the customer approval process. A PDF file presumably ready for print can be sent by e-mail or other mode to a client for review and markup. The client can use any of Acrobat's new tools, such as the Pencil, Highlighter, or Electronic/Sticky Notes, to mark any needed corrections, and then e-mail the file back.

Also key in the approval process is a product announced in early March, called PressReady. Using either native-language files or PDF files which were created in a one-step process, PressReady is designed to provide very accurate proofs from relatively inexpensive desktop inkjet printers. PressReady contains a full PostScript 3 RIP as well as sup-

port for ColorSync. PressReady also provides a printer driver which replaces the driver normally used. At this time, PressReady supports selected inkjet printers from Canon, Epson, and HP and is scheduled to be available in May. It will ship with several ICC input profiles, Adobe Gamma for creating a monitor profile, and a number of output profiles.

In recent years, imposition has become an extremely important part of many large printers' workflow. Rather than having to accommodate dozens or hundreds of native file formats, producing PDF files prior to imposition simplifies the work of the imposition software vendors. Because now a new file format from any vendor can be converted to

Color management vendors:

Adobe

408/536-6000
www.adobe.com
infoNOW 85

Imation

888/466-3456
www.imation.com
infoNOW 93

Agfa

978/658-5600
www.agfahome.com
infoNOW 86

Kodak Polychrome Graphics

877/574-7274
www.kpgraphics.com
infoNOW 94

Barco Graphics

937/454-1721
www.barco.com/graphics
infoNOW 87

Monaco Systems

978/749-9944
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infoNOW 95

Candela

612/894-6247
www.candelacolor.com
infoNOW 88

Pantone

888/726-8663
www.pantone.com
infoNOW 96

Color Savvy

513/748-9160
www.colorsavvy.com
infoNOW 89

Praxisoft

800/557-7294
www.praxisoft.com
infoNOW 97

Color Solutions

760/436-6593
www.color.com
infoNOW 90

RIT Research Corp.

716/239-6000
www.rc.rit.edu
infoNOW 98

GretagMacbeth

800/622-2384
www.gretagmacbeth.com
infoNOW 91

Southwest Software

888/279-7638
www.swsoft.com
infoNOW 99

Heidelberg CPS

888/546-6265
www.linocolor.com
infoNOW 92

X-Rite

888/826-3059
www.x-rite.com
infoNOW 100

Color management is one of those daunting terms that can instill fear in the mind of even the most confident prepress user.

a PDF, imposition work need not be impeded when a user converts to an application with a new file format. All major imposition applications support PDF files. Quite Imposing and Quite Imposing Plus, both Acrobat plug-ins from Quite Software Inc., provide imposition for PDF files only. The resulting imposed file is also a PDF file.

Color workflow

Color management is one of those daunting terms that can instill fear in the mind of even the most confident prepress user. And because of its relative incompatibility with standard color management solutions, earlier versions of Acrobat left high-end color

users waiting for a solution with which they could be comfortable. With support for ICC profiles, native CMYK file support, bleed page ability, and comprehensive resolution control, Acrobat 4 finally provides the tools needed for high-end color reproduction. Software and hardware tools available for color management of native application files now will also help ensure that output from your PDF files looks its best.

Almost all of the software solutions out there right now are based on ICC standards, so if you can accurately profile your input and output devices, then you can use those profiles throughout your PDF workflow. That will help, but there's no substitute for a good understanding of color.

A final note

With the updating of the PDF file format from v1.2 to v1.3, many of the suppliers of plug-ins are busy updating their offerings. Acrobat 4 now does some of the procedures previously done only by plug-ins. On the other hand, the extended capability of the PDF v1.3 format means that the plug-in vendors can provide additional added value. For the majority of them, this is expected to be a relatively quick process, and several of them, including Enfocus and Quite, have already announced those plans and have upgraded their products. Several of the suppliers of PDF/Acrobat plug-ins have gotten together to offer a suite of products to enhance the usage of PDF files. Enfocus, Lantana, and Quite collectively offer the "PDF PowerPack," a collection of plug-ins available for either Macs or Windows PCs that costs less than if you purchased the products separately.

With Acrobat 4, Adobe has significantly altered the landscape of professional reproduction. From designer to printer, the new PDF format and its capabilities seem to provide something for almost all parts of the prepress process. We will be seeing much more of PDF in the next few years.

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